



REGIONAL OFFICE

By Speed Post

STATE POLLUTION CONTROL BOARD, ODISHA
(Department of Forest & Environment, Govt. of Odisha)
4th Lane, Indira Nagar, RAYAGADA – 765 001.
Tel. (06856) 223073 Fax – 224281

No. 178

Date 25.01.2011

Er.P.C.Rauta,
Regional Officer

To

The Chief Operating Officer,
M/s Vedanta Aluminium Limited,
Lanjigarh, Kalahandi

Sub:- Inspection report of M/s Vedanta Aluminium Limited, Lanjigarh, Kalahandi.

Sir,

Please find enclosed herewith the inspection report of the above unit for favour of information and necessary action.

Encl As above.

Yours faithfully,


Regional officer

INSPECTION REPORT

Name of the Industry : M/s. Vedanta Aluminium Ltd.,
At/PO.-Lanjigarh, Dist-Kalahandi.

Date of inspection : 13th, 14th & 15th January 2011

Visited the unit to enquire about the public complain raised by the villagers of Kapaguda villages, Kalahandi, regarding pollution caused by the unit and to verify the compliance to the directions issued to the unit by MoEF vide F.No. J-11011/81/2003-1A-II (I) dt 20.10.2010. During inspection, out of two streams of the unit, only one stream having capacity of 0.5MTPA was in operation.

Kapaguda Village is situated Near the Eastern boundary of the Plant and about 50 nos. houses exist in the village. During inspection, interacted with the following villagers of Kapaguda village

- | | |
|-------------------------|---------------------|
| 1. Sri Laxman Saha | 5. Sri Lahara Majhi |
| 2. Sri Satya Majhi | 6. Sri Madhab Majhi |
| 3. Sri Chintamani Majhi | 7. Sri Lachi Majhi |
| 4. Sri Abhi Majhi | 8. Sri Nanda Majhi |

During interaction with the villagers it was informed that earlier there used to be 2 nos. streams flowing to their village which have now got diverted near village Dengasargi and another one near village Basantapada. The people of the village Kapaguda depend on the nearby Pond and River Bansadhara for bathing purpose and depend on the tube well inside the village for their drinking purposes. There is complaint of water pollution to the nearby pond and to the Bansadhara River due to discharge of company effluent. Water samples are collected from the different locations and analysis result is tabulated below. Further, there is complaint of Air pollution caused by the unit, for which the villagers and their household animals are getting affected. Ambient air monitoring near their village and stack monitoring (at Powerplant and Calciner) was conducted to verify the Ambient air quality and emission from the Unit. The analysis result is tabulated below. Also there is complaint of Noise pollution caused by the unit. Noise Monitoring has been carried out near village Kapaguda to verify the sound level. The monitoring result is tabulated below. The villagers informed that presently there is no such problem of Noise pollution in their village. *The only demand the villagers have, is that, their village should be shifted to some suitable place.*

Various major sources of pollution and their control measures adopted by the unit are inspected and following observations are made.

Water Pollution and Control Measures adopted : The unit has made different water and waste water containment area for control of water pollution

I) Clear water pond: Waste water generated from power plant area and some other non-contaminated areas are discharged into a pond through open drain and stored in this pond. It has also provided pumping arrangement for its use for different purpose such as dust suppression, floor washing and plantation purpose inside the plant. No discharge of water from the clear water pond to outside is observed.

II) Dirty water pond: The dirty water receives all contaminated water of the process area and stored for reuse. This area is within the boundary of core plant and by the side of Vansadhara river. The pond is divided in to two parts. During inspection it is observed that the contaminated water of the process are stored in the 2nd section of the Dirty water pond and reused in the process. Whereas discharge to the 1st portion of the pond is stopped to remove the Red mud collected in it. So that 1st portion of the pond is ready to receive contaminated water from the process. Dirty water pond has been made impervious. No seepage/ leakage from the pond is observed.

III) Raw water Reservoir - Raw water is sourced from the river Tel and stored in the raw water reservoir for use in the plant. The raw water reservoir is located very close to the river Vansadhara and at a lower elevation compared to some of the processing areas. No seepage/ leakage from the Raw water Reservoir is observed.

IV) Red Mud Pond: High concentration of alkaline slurry from the Alumina process area of the plant is discharged into the Red Mud Pond through pipe line. It consists of two cells namely East cell & West Cell. The West cell is now in line, where as the East cell is under completion stage. No seepage/ leakage is observed during inspection. It was observed that the unit is taking steps for strengthening the dykes by raising the height.

V) Process water lake: It receives decanted water from the red mud pond and it is also made impervious by HDPE lining. Waste water stored in the lake and recycled back to the plant for reuse. The unit has provided a masonry pit with steel lining for collection of such water and pumping the seepage water to the lake. No seepage/ leakage from the Process water lake is observed.

VI) Ash pond: The high concentrated ash slurry generated from the process is discharged into the pond and the decanted water is stored for reutilization in the process. There is Provision of another decanted pond for the over flow of the existing decanted water from the ash pond. During inspection it is observed that the over flow decanted water from the ash pond is collected in the decanted pond. However No Discharge/seepage/ leakage from the Ash pond or Decantation pond is observed. Piping arrangement is under progress to recycle the decanted water to the plant.

Water gets treated in its Water Treatment Plant inside plant premises & distributed for use for different purposes. The wastewater generated from different sources and its treatment, disposal arrangement are given below.

Source	Mode of disposal
Ash slurry	Through pipe line to Ash pond.
Red mud slurry	Red mud pond west cell having area of 15 Ha. in 1st phase followed by process water lake (16 Ha.) All caustic waste water from red mud pond is pumped to process water lake from where it is taken back to process for reuse.
W.T. Plant (Back wash water from Sand Filter)	Discharged to clean storm water pond of 75,000 M3 capacity. Reused for plantation /green belt development after sedimentation.
Wet Scrubber in lime processing unit	Complete recirculation to slackers.
Internal caustic effluent drains	All internal drains are of RCC type with HDPE liner.

The detailed location of sampling points of river water, stream water and tube well water and the analysis report of samples are tabulated below.

Sl.No.	Location of sampling point	pH
01	River Vansadhara near Tentulipadar (U/S)	7.0
02	River Vansadhara near Jagannathpur Bridge (U/S)	7.2
03	River Vansadhara near Chhatrapur Bridge (DU/S)	7.7
04	Tube well water from Kapaguda	6.7
05	Pond water near Village Kapaguda	6.9
06	River Vansadhara near Village Bundel (U/S)	7.6
07	Stream water near Village Bundel	6.7
08	Raw water Reservoir of M/s VAL	8.0
09	Clear water pond of M/s VAL	7.8
10	Over flow of Ash Pond of M/s VAL	7.3

It is observed from the above analysis result that the pH quality of water samples collected from different locations (Inside and Outside the Plant) are well within the standards prescribed by the Board.

Air Pollution and Control measures adopted :

As per direction of the Board the unit has upgraded all the ESPs. During inspection Boiler#2 was in operation, Stack monitoring was conducted at Boiler#2 and Calciner of the Unit and the monitoring results are represented below.

Monitoring Result: Stack emission:

Location of the sampling points	Particulate matter emission in mg/Nm ³	Prescribed standard
Stack attached to C.F. Boiler-II after ESP	80.7	100
Stack attached to calciner plant after ESP	49.6	100

It is observed from the above stack Monitoring Result that, the Particulate matter emission of Stack attached to C.F. Boiler-II after ESP and Stack attached to calciner plant after ESP are well within the Prescribed standard of the Board.

Aggregate storage and handling:

- i) ***Bauxite handling plant:*** The unit has made provision like high pressure water jet to suppress the dust generation during storage and handling of bauxite. Similarly the bauxite crushing unit has inbuilt control system like atomized water spraying at various dust generation points. The unit has provided Bag filters and dedicated Online (Mobile) Vacuum Cleaning System for collection of fine dusts. No visible dust emission was observed from such areas.
- ii) ***Lime handling plant:*** Here the scrubbed liquid is stored and recycled; the unit has made provision of wet scrubber for control of fugitive emission. No significant emission is noticed in the Lime handling plant.
- iii) ***Coal handling area:*** Coal from the stock piled area is transferred through the conveyer belt to the power plant for production of steam and power. Dry Fog System is in place to control the dust emission in its crushers and transfer points. The unit has made provision like atomized water sprinkling system at all potential sources of dust generation points to suppress the fugitive dust. No visible dust emission was observed from Coal handling areas.

The major air pollution sources (Both Stationary and Fugitive emission) of the industry and various control measures are as follows:

Source	Pollutant type	Control measures
Bauxite handling area	Bauxite dust	Dry Fog system is provided to control dust emission in its crushers & at different transfer points. Water Spraying arrangement at stock piles has been provided by the unit. All conveyer belts are provided with Hood covering. A dedicated Online (Mobile) Vacuum Cleaning System is provided for collection of fine dusts inside the Bauxite handling area.
Lime handling area	Lime dust	Wet scrubber system is installed to control lime dust during processing.
Coal handling area	Coal dust	Dry Fog System is in place to control the dust emission in its crushers and transfer points and water sprinkler for coal storage yard.
Alumina handling system	Alumina powder	Dust extraction systems with bag filters (One for each stream) are provided to control fugitive emissions from transfer points, conveyers and silo. Fixed Vacuum Cleaning System is provided for collection of fine dusts inside the Alumina handling area.
Pulverized fuel fired boilers	SPM from Flue gas	ESP with C.F.B. 1, 2, 3,- each, having a common stack of height 150 m. from GL.

Monitoring of Ambient Air Quality of both inside the factory and outside the factory was conducted to assess the ambient air quality status. The monitoring results are tabulated below.

Sl. No.	Location of sampling points	Type	(RPM) µg/Nm ³	Prescribed Standard µg/Nm ³
01.	Over the roof of the project office	Industrial	58	100
02.	Village Kapaguda (Near Switch Yard)	Residential	24	100
03.	Over the roof of MDM Building	Residential	28	100
04.	Over the roof of community hall of Rehab Colony	Residential	26	100
05.	Near Lime Handling Area	Industrial	39	100
06.	Inside the premises of Proposed Science College.	Residential	33	100

It is observed from the above analysis report that the concentration in the ambient air inside the factory and outside the factory are within the prescribed standard of the Board.

SOLID WASTES:

Major type of solid wastes generated from different units of the plant and their mode of disposal are described below.

Source	Type	Mode of disposal	Remarks
C.F. Boilers (1,2&3)	Ash (98% Fly & 2% Bottom)	Ash pond (Ash slurry) by HCSD system.	Life of ash pond-A is about 12 years followed by another ash pond-B of about 6 year life.
Mud washers	Red mud	Red mud pond (Red mud slurry) by HCSD system.	Life of red mud pond west cell 3.5 years followed by another East cell of life 6.5 years.
Lime	Lime grit	Disposed using trucks into red mud pond.	Disposed along with Red mud pond

HCSD System: This system is used to transport red mud and fly ash to red mud pond and ash pond respectively. Here, slurry with solids ratio of 50 % is prepared and pumped in a pipeline using GEHO reciprocating pumps to the point of disposal.

NOISE POLLUTION:

Noise is audible in the nearby surrounding villages due to industrial activity as the villages are located very close to the unit. Noise monitoring has been carried out at Village Kapaguda. The monitoring result is represented below.

Date	Time	Sound level measured at Village Kapaguda during Operation of the Plant in dB(A) Leq.	Prescribed Ambient Air Quality standard limit in respect of Noise during day time (6 A.M. ~ 10 P.M.)* in dB(A) Leq.
13.01.2011	17:25 to 17:35	47.1	55

* Prescribed Ambient Air Quality standard limit in respect of Noise as per the Gazi Notification dt. 14th February, 2000 of Ministry of Environment and Forest, Govt. India,

It is observed from the above noise monitoring result that the noise level near Village Kapaguda is well below the standard prescribed by of Ministry of Environment and Forest, Govt. Of India.

COMPLIANCE TO THE DIRECTIONS ISSUED TO M/s. VEDANTA ALUMINIUM LT
BY MoEF VIDE F.NO. J-11011/81/2003-IA-II (I) DT 20.10.2010

Sl. No.	COMPLIANCE CONDITIONS	OBSERVATION
01	M/s VAL shall immediately install piezometere around the red mud and ash ponds to monitor the ground water level, fluctuations and the quality parameters on quarterly basis. This analysis of water quality shall be done from a laboratory notified under EP Act 1986 and the data generated shall be displayed on the website of the company as well s at important places for public information and the data submitted to the regional office of the ministry at Bhubaneswar	One no. Piezometere is installed at th mud and One no. Piezometere is install ash pond to monitor the ground water I fluctuations and the quality parameter: quarterly basis. The analysis report along photograph of installation is also submitte the Board.
02	The bauxite shall be sourced from only those mines, which have prior environmental clearance	It is informed that the unit is sourcing Bau from BALCO, Chatisgarh ;C.R M Company, MPMDC, Madhya Prade Gujrat Mineral Development Corporat Gujrat; Laxmidas Ramji, Madhya Prades which have prior environmental clearance.
03	M/s VAL shall cover 25% of the plant are by raising green belt within two years. The selection of the plant species shall be as per the agro-climate zone, preferably with the native species. The company shall submit detailed plan for green belt development and plantation within 90 days showing the area to be covered, plant density and plant species to the MoEF and Regional office and complete implementation within a period of two years.	Plantation has been carried out Around / Pond, Around Process water lake, Betw PWL and staff colony road, Around Red v Pond, Roadside land from Rehab colony staff colony, inside staff colony, Behind Di water pond, Beside clean water pond, N Power plant and Near calciner Unit.
04	Design efficinecy parmeters of all the scrubbing systems shall be evaluated and any such	New bag filters are installed at calcit transfer point

	<p>rectification required shall be implemented immediately. All the approach roads including the roads within the plant shall be blacktopped and regular sprinkling on the roads shall be ensured.</p>	<p>Water sprinkling arrangements are enhanced at Bauxite handling area and coal handling area.</p> <p>Mobile and fixed Vacuum cleaning system is provided for collection of fine dusts from different areas of the unit</p> <p>All the approach roads to the plant as well as within the plant are blacktopped and regular water sprinkling is done to minimize fugitive emission due to vehicular movement. Some of the black topped roads are converted into concrete roads inside the plant. The railway system also has been commissioned recently which helps in reducing the vehicular movement.</p>
05	<p>The company shall immediately undertake continuous monitoring of ambient air quality and stack emissions for all the parameters and real time data shall be displayed at convenient location near the main gate of the company in public domain. The data generated shall also be submitted to the regional office of the ministry / CPCB/SPCB.</p>	<p>A new display board has already been ordered and as informed by the industry personnel this system will be operational likely by February 2011.</p>
06	<p>The company shall undertake measures for energy conservation and make all possible efforts to achieve by December 2012 caustic consumption, fuel oil consumption, lime consumption and electricity consumption following best technology to reduce the impact on the natural resources. The indicative parameters for 1 MTPA alumina refinery are given below:</p> <p>The caustic consumption 65 kg/ton from the existing 115.2 kg /ton</p> <p>The lime consumption shall be 50 kg / ton of alumina</p> <p>The fuel oil consumption shall be 90 litres /</p>	<p>The caustic consumption is observed to be 115.2 kg /ton of alumina</p> <p>The lime consumption is observed to be 65.2 kg / ton of alumina</p> <p>The fuel oil consumption is observed to be 72.7 litres / ton of alumina.</p> <p>Extraction efficiency is 91.0%</p> <p>Above data are obtained from the Monthly report of M/s VAL, for the month of Dec 2010.</p>

	ton Extraction efficiency above 95%	
07	The company shall comply with all the conditions stipulated in the environmental clearance for the project in vide letter no J.11011/81/2003-IA-II(I) dated 22 September 2004.	The company has promised to comply
08	The company shall submit un-revocable bank guarantee for an amount of Rs 10 crores valid for a period of three years within 15 days to the state pollution control (SPCB), Orissa for implementation of all environmental protection measures.	The company has submitted an un-revocable bank guarantee for an amount of Rs 10 crores valid for a period of three years to the state pollution control (SPCB), Orissa for implementation of all environmental protection measures

OTHER OBSERVATIONS:

- During inspection it is observed that the unit has stopped its Expansion work and no expansion work is under progress.
- It is informed and also observed that the unit is using the following Railway sidings. And present status of these Railway sidings are as follows:
 - i) Ambodala Railway siding : Closed presently
 - ii) Kesinga Railway siding : Closed presently
 - iii) Dahikhal: Using 20 to 30 % of total bauxite
 - iv) Rayagada: sparingly used for Coal

Since the Railway sidings (at ii, iii, iv) are owned by Indian Railway, the Railway authorities are directed by the Board to adopt suitable pollution control measures at the said sidings to avoid any kind of Environmental Nuisances.

As per the data obtained from the National River water monitoring program, The River water quality of Vansadhara River near Muniguda and Gunupur also confirms to the prescribed standards.

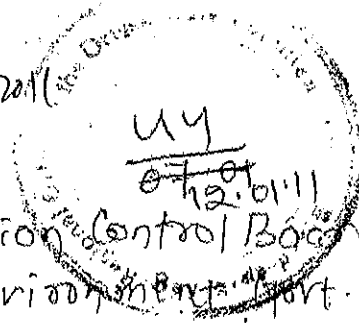
CONCLUSION & REMARKS:

The unit has complied with most of the directions issued to it by MoEF and remaining compliances are observed to be under progress.


 (Er. D.Sethi)
 Asst. Env. Engineer

→ Naidu

31.1.2011



AEE
Unsub
15/12/11

To
The President State Pollution Control Board (Odisha)
Department of Forest & Environment

Sub:- Application for shifting our village kapaguda to a suitable place due to different types of unsocial works by Vedanta Alumina Ltd, Lanjigarh and its Remedies.

Sir,

With due respect and humble submission we the people of village Kapaguda beg to draw your kind consideration for the following few facts and kind decisions.

That a road runs from our village to Basantapada. The small children of our village are going to read Basant Pada School. If that road is closed by Vedanta Company, then the education of the small children will be closed.

That two fountains are flowing from Niyamgiri through Densargi and Basantapada to our village. But Vedanta Company has closed the flow of the springs to our area.

That Vedanta Company is situated only hundred metres away to our village all types of inconvenient acts like poisenous smoking of coal attacks the eye sight, nose and ear of animals and humanbeings. People of this village don't sleep well due to regular sound of the plant.

That the people of other villages are coming and taking the articles of the plant but the silent people of our village are attacked by police and get punishment.

Under the above circumstance we the innocent people of village Kapaguda beg to draw your kind attention to transfer us to a near by safety place, where we can live safely and happily and oblige.

Your's faithfully

Place:-Kapaguda

Date:- 04.12.2010

The people of Village Kapaguda
Kalahandi

Handwritten signature in Odia script.

Handwritten signature in Odia script and a circular official stamp.

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Danga majhi

Prakata majhi



LT 9 of

Sandu majhi

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Unasa majhi



Solsing majhi

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Lokar majhi

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LT 7 of

Mami majhi



Kanda majhi



LT 1 of

Bentoi majhi



LT 9 of

Kalica majhi

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LT 9 of

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LT 2 of

Kunru nje majhi

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Abhimanyu Natak



of - Salachara Natak

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